

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

Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).

!python -m pip install pyyaml==5.1

Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Collecting pyyaml==5.1
  Downloading PyYAML-5.1.tar.gz (274 kB)
    Preparing metadata (setup.py) ... done
  Building wheels for collected packages: pyyaml
    Building wheel for pyyaml (setup.py) ... done
      Created wheel for pyyaml: filename=PyYAML-5.1-cp39-cp39-linux_x86_64.whl size=44089 sha256=2608e05733269e9c4e0b3cef8c46af60a51c0ff530...
      Stored in directory: /root/.cache/pip/wheels/68/be/8f/b6c454cd264e0b349b47f8ee00755511f277618af9e5dae20d
Successfully built pyyaml
Installing collected packages: pyyaml
  Attempting uninstall: pyyaml
    Found existing installation: PyYAML 6.0
    Uninstalling PyYAML-6.0:
      Successfully uninstalled PyYAML-6.0
ERROR: pip's dependency resolver does not currently take into account all the packages that are installed. This behaviour is the source
flax 0.6.8 requires PyYAML>=5.4.1, but you have pyyaml 5.1 which is incompatible.
dask 2022.12.1 requires pyyaml>=5.3.1, but you have pyyaml 5.1 which is incompatible.
Successfully installed pyyaml-5.1
```

```
!python -m pip install 'git+https://github.com/facebookresearch/detectron2.git'

  Preparing metadata (setup.py) ... done
Collecting portalocker
  Downloading portalocker-2.7.0-py2.py3-none-any.whl (15 kB)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.9/dist-packages (from detectron2==0.6) (4.39.3)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.9/dist-packages (from detectron2==0.6) (1.0.7)
Requirement already satisfied: importlib-resources>=3.2.0 in /usr/local/lib/python3.9/dist-packages (from detectron2==0.6)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.9/dist-packages (from detectron2==0.6) (0.11.0)
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.9/dist-packages (from detectron2==0.6) (3.0.9)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.9/dist-packages (from detectron2==0.6) (1.4.4)
Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/python3.9/dist-packages (from detectron2==0.6) (2.8)
Collecting mypy-extensions>=0.4.3
  Downloading mypy_extensions-1.0.0-py3-none-any.whl (4.7 kB)
Requirement already satisfied: click>=8.0.0 in /usr/local/lib/python3.9/dist-packages (from black>detectron2==0.6) (8.1.3)
```

```
Building wheel for antlr4-python3-runtime (setup.py) ... done
Created wheel for antlr4-python3-runtime: filename=antlr4_python3_runtime-4.9.3-py3-none-any.whl size=144573 sha256=dc44342011b8adc
Stored in directory: /root/.cache/pip/wheels/23/cf/80/f3efab22e6ab23277902ee9165fe772eeb1dfb8014f359020a
Successfully built detectron2 fvcore antlr4-python3-runtime
Installing collected packages: antlr4-python3-runtime, yacs, portalocker, pathspec, omegaconf, mypy-extensions, iopath, hydra-core, b
Successfully installed antlr4-python3-runtime-4.9.3 black-23.3.0 detectron2-0.6 fvcore-0.1.5.post20221221 hydra-core-1.3.2 iopath-0.1
```

```
!pip install detectron2 -f https://dl.fbaipublicfiles.com/detectron2/wheels/{CUDA_VERSION}/{TORCH_VERSION}/index.html

Requirement already satisfied: black in /usr/local/lib/python3.9/dist-packages (from detectron2) (23.3.0)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.9/dist-packages (from detectron2) (3.7.1)
Requirement already satisfied: pycocotools>=2.0.2 in /usr/local/lib/python3.9/dist-packages (from detectron2) (2.0.6)
Requirement already satisfied: yacs>=0.1.8 in /usr/local/lib/python3.9/dist-packages (from detectron2) (0.1.8)
Requirement already satisfied: termcolor>=1.1 in /usr/local/lib/python3.9/dist-packages (from detectron2) (2.2.0)
Requirement already satisfied: packaging in /usr/local/lib/python3.9/dist-packages (from detectron2) (23.1)
Requirement already satisfied: tensorboard in /usr/local/lib/python3.9/dist-packages (from detectron2) (2.12.2)
Requirement already satisfied: cloudpickle in /usr/local/lib/python3.9/dist-packages (from detectron2) (2.2.1)
Requirement already satisfied: hydra-core>=1.1 in /usr/local/lib/python3.9/dist-packages (from detectron2) (1.3.2)
Requirement already satisfied: iopath<0.1.10,>=0.1.7 in /usr/local/lib/python3.9/dist-packages (from detectron2) (0.1.9)
Requirement already satisfied: Pillow>=7.1 in /usr/local/lib/python3.9/dist-packages (from detectron2) (8.4.0)
Requirement already satisfied: tabulate in /usr/local/lib/python3.9/dist-packages (from detectron2) (0.8.10)
Requirement already satisfied: omegaconf>=2.1 in /usr/local/lib/python3.9/dist-packages (from detectron2) (2.3.0)
Requirement already satisfied: tqdm>4.29.0 in /usr/local/lib/python3.9/dist-packages (from detectron2) (4.65.0)
Requirement already satisfied: pyyaml>=5.1 in /usr/local/lib/python3.9/dist-packages (from fvcore<0.1.6,>=0.1.5->detectron2) (5.1)
Requirement already satisfied: numpy in /usr/local/lib/python3.9/dist-packages (from fvcore<0.1.6,>=0.1.5->detectron2) (1.22.4)
Requirement already satisfied: antlr4-python3-runtime==4.9.* in /usr/local/lib/python3.9/dist-packages (from hydra-core>=1.1->detectron2)
Requirement already satisfied: portalocker in /usr/local/lib/python3.9/dist-packages (from iopath<0.1.10,>=0.1.7->detectron2) (2.7.0)
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Requirement already satisfied: click>=8.0.0 in /usr/local/lib/python3.9/dist-packages (from black->detectron2) (8.1.3)
Requirement already satisfied: platformdirs>=2 in /usr/local/lib/python3.9/dist-packages (from black->detectron2) (3.2.0)
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Requirement already satisfied: pathspec>0.9.0 in /usr/local/lib/python3.9/dist-packages (from black->detectron2) (0.11.1)
Requirement already satisfied: werkzeug>=1.0.1 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (2.2.3)
Requirement already satisfied: google-auth<3,>=1.6.3 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (2.17.3)
Requirement already satisfied: tensorboard-data-server<0.8.0,>=0.7.0 in /usr/local/lib/python3.9/dist-packages (from tensorboard->det
Requirement already satisfied: protobuf>=3.19.6 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (3.20.3)
Requirement already satisfied: requests<3,>=2.21.0 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (2.27.1)
Requirement already satisfied: google-auth-oauthlib<1.1,>=0.5 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2)
Requirement already satisfied: wheel>=0.26 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (0.40.0)
Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2)
Requirement already satisfied: markdown>=2.6.8 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (3.4.3)
Requirement already satisfied: grpcio>=1.48.2 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (1.53.0)
Requirement already satisfied: setuptools>=41.0.0 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (67.6.1)
Requirement already satisfied: absl-py>=0.4 in /usr/local/lib/python3.9/dist-packages (from tensorflow->detectron2) (1.4.0)
Requirement already satisfied: six>=1.9.0 in /usr/local/lib/python3.9/dist-packages (from google-auth<3,>=1.6.3->tensorboard->detect
Requirement already satisfied: cachetools<6.0,>=2.0.0 in /usr/local/lib/python3.9/dist-packages (from google-auth<3,>=1.6.3->tensorbo
Requirement already satisfied: pyasn1-modules>=0.2.1 in /usr/local/lib/python3.9/dist-packages (from google-auth<3,>=1.6.3->tensorboa
Requirement already satisfied: rsa<5,>=3.1.4 in /usr/local/lib/python3.9/dist-packages (from google-auth<3,>=1.6.3->tensorboard->dete
Requirement already satisfied: requests-oauthlib>=0.7.0 in /usr/local/lib/python3.9/dist-packages (from google-auth-oauthlib<1.1,>=0.
Requirement already satisfied: zipp>=3.1.0 in /usr/local/lib/python3.9/dist-packages (from importlib-resources>=3.2.0->matplotlib->de
Requirement already satisfied: importlib-metadata>=4.4 in /usr/local/lib/python3.9/dist-packages (from markdown>=2.6.8->tensorboard->
Requirement already satisfied: charset-normalizer~2.0.0 in /usr/local/lib/python3.9/dist-packages (from requests<3,>=2.21.0->tensorb
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.9/dist-packages (from requests<3,>=2.21.0->tensorboard->detect
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.9/dist-packages (from requests<3,>=2.21.0->tensorboard->d
Requirement already satisfied: urllib3<1.27,>=1.21.1 in /usr/local/lib/python3.9/dist-packages (from requests<3,>=2.21.0->tensorboard
Requirement already satisfied: MarkupSafe>=2.1.1 in /usr/local/lib/python3.9/dist-packages (from werkzeug>=1.0.1->tensorboard->detect
Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in /usr/local/lib/python3.9/dist-packages (from pyasn1-modules>=0.2.1->google-aut
Requirement already satisfied: oauthlib>=3.0.0 in /usr/local/lib/python3.9/dist-packages (from requests-oauthlib>=0.7.0->google-auth-
```

```
from google.colab import files
files.upload()
```



```
!git clone https://github.com/facebookresearch/detectron2.git
Cloning into 'detectron2'...
remote: Enumerating objects: 15007, done.
remote: Counting objects: 100% (32/32), done.
remote: Compressing objects: 100% (26/26), done.
remote: Total 15007 (delta 10), reused 23 (delta 6), pack-reused 14975
Receiving objects: 100% (15007/15007), 6.10 MiB | 23.75 MiB/s, done.
Resolving deltas: 100% (10873/10873), done.

%cd detectron2
/content/detectron2

!python setup.py build develop
Best match: tensorboard 2.12.2
Adding tensorboard 2.12.2 to easy-install.pth file
Installing tensorboard script to /usr/local/bin

Using /usr/local/lib/python3.9/dist-packages
Searching for tqdm==4.65.0
Best match: tqdm 4.65.0
Adding tqdm 4.65.0 to easy-install.pth file
Installing tqdm script to /usr/local/bin

Using /usr/local/lib/python3.9/dist-packages
Searching for cloudpickle==2.2.1
Best match: cloudpickle 2.2.1
Adding cloudpickle 2.2.1 to easy-install.pth file

Using /usr/local/lib/python3.9/dist-packages
Searching for tabulate==0.8.10
Best match: tabulate 0.8.10
Adding tabulate 0.8.10 to easy-install.pth file
Installing tabulate script to /usr/local/bin

Using /usr/local/lib/python3.9/dist-packages
Searching for yacs==0.1.8
Best match: yacs 0.1.8
Adding yacs 0.1.8 to easy-install.pth file

Using /usr/local/lib/python3.9/dist-packages
Searching for termcolor==2.2.0
Best match: termcolor 2.2.0
Adding termcolor 2.2.0 to easy-install.pth file

Using /usr/local/lib/python3.9/dist-packages
Searching for pycocotools==2.0.6
Best match: pycocotools 2.0.6
Adding pycocotools 2.0.6 to easy-install.pth file

Using /usr/local/lib/python3.9/dist-packages
Searching for matplotlib==3.7.1
Best match: matplotlib 3.7.1
Adding matplotlib 3.7.1 to easy-install.pth file

Using /usr/local/lib/python3.9/dist-packages
Searching for Pillow==8.4.0
Best match: Pillow 8.4.0
Adding Pillow 8.4.0 to easy-install.pth file

Using /usr/local/lib/python3.9/dist-packages
Searching for typing-extensions==4.5.0
Best match: typing-extensions 4.5.0
Adding typing-extensions 4.5.0 to easy-install.pth file

Using /usr/local/lib/python3.9/dist-packages
Searching for toml==2.0.1
Best match: toml 2.0.1
Adding toml 2.0.1 to easy-install.pth file

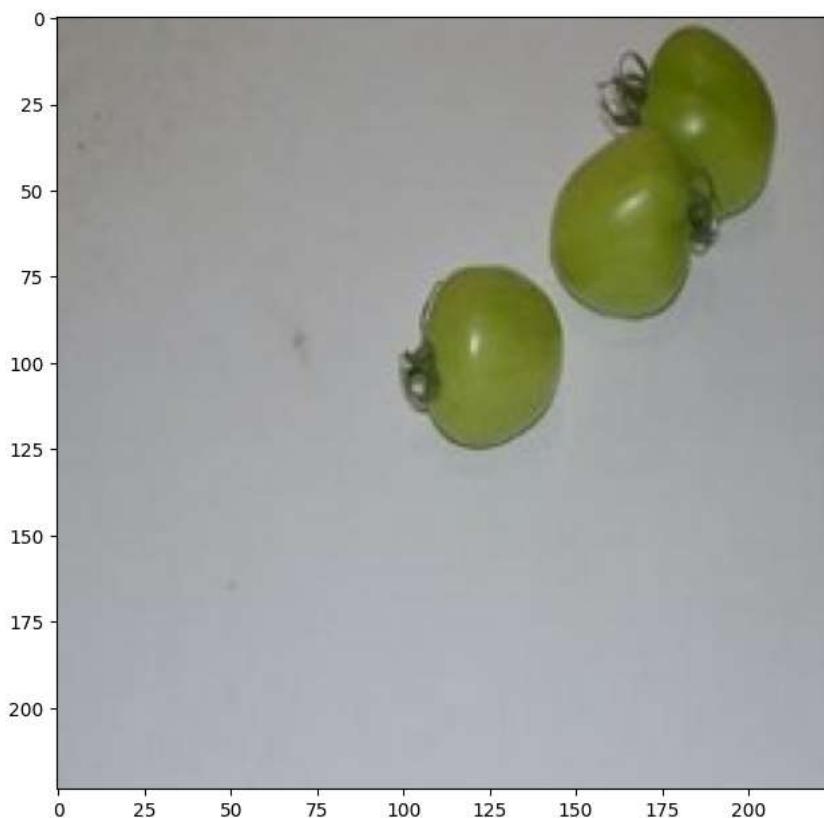
Using /usr/local/lib/python3.9/dist-packages
Searching for platformdirs==3.2.0
```

```
from detectron2.engine import DefaultPredictor
from detectron2.config import get_cfg
from detectron2.data import MetadataCatalog
from detectron2.utils.visualizer import Visualizer
import cv2

im=cv2.imread("/content/1001.jpg")
```

```
import matplotlib.pyplot as plt
plt.figure(figsize=(15,7.5))
plt.imshow(im[...,:-1])
```

```
<matplotlib.image.AxesImage at 0x7fef9e7e12e0>
```



```
from detectron2 import model_zoo
cfg = get_cfg()
cfg.merge_from_file(model_zoo.get_config_file("COCO-Detection/faster_rcnn_R_101_FPN_3x.yaml"))
cfg.MODEL.ROI_HEADS.SCORE_THRESH_TEST=0.5
cfg.MODEL.WEIGHTS = model_zoo.get_checkpoint_url("COCO-Detection/faster_rcnn_R_101_FPN_3x.yaml")
```

```
cfg.MODEL_DEVICE="cuda"
predictor = DefaultPredictor(cfg)
outputs=predictor(im)
```

```
model_final_f6e8b1.pkl: 243MB [00:02, 111MB/s]
/usr/local/lib/python3.9/dist-packages/torch/functional.py:504: UserWarning: torch.meshgrid: in an upcoming release, it will be required
    return _VF.meshgrid(tensors, **kwargs) # type: ignore[attr-defined]
```

```
import detectron2
from detectron2.utils.logger import setup_logger
setup_logger()

# import some common libraries
import numpy as np
import os, json, cv2, random
from google.colab.patches import cv2_imshow

# import some common detectron2 utilities
from detectron2 import model_zoo
from detectron2.engine import DefaultPredictor
```

```

from detectron2.config import get_cfg
from detectron2.utils.visualizer import Visualizer
from detectron2.data import MetadataCatalog, DatasetCatalog

!pip install detectron2 -f https://dl.fbaipublicfiles.com/detectron2/wheels/cu102/torch1.9/index.html

Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Looking in links: https://dl.fbaipublicfiles.com/detectron2/wheels/cu102/torch1.9/index.html
Requirement already satisfied: detectron2 in /usr/local/lib/python3.9/dist-packages (0.6)
Requirement already satisfied: cloudpickle in /usr/local/lib/python3.9/dist-packages (from detectron2) (2.2.1)
Requirement already satisfied: pycocotools>=2.0.2 in /usr/local/lib/python3.9/dist-packages (from detectron2) (2.0.6)
Requirement already satisfied: fvcore<0.1.6,>=0.1.5 in /usr/local/lib/python3.9/dist-packages (from detectron2) (0.1.5.post20221221)
Requirement already satisfied: termcolor>=1.1 in /usr/local/lib/python3.9/dist-packages (from detectron2) (2.2.0)
Requirement already satisfied: Pillow>=7.1 in /usr/local/lib/python3.9/dist-packages (from detectron2) (8.4.0)
Requirement already satisfied: yacs>=0.1.8 in /usr/local/lib/python3.9/dist-packages (from detectron2) (0.1.8)
Requirement already satisfied: iopath<0.1.10,>=0.1.7 in /usr/local/lib/python3.9/dist-packages (from detectron2) (0.1.9)
Requirement already satisfied: hydra-core>=1.1 in /usr/local/lib/python3.9/dist-packages (from detectron2) (1.3.2)
Requirement already satisfied: black in /usr/local/lib/python3.9/dist-packages (from detectron2) (23.3.0)
Requirement already satisfied: tensorboard in /usr/local/lib/python3.9/dist-packages (from detectron2) (2.12.2)
Requirement already satisfied: tabulate in /usr/local/lib/python3.9/dist-packages (from detectron2) (0.8.10)
Requirement already satisfied: packaging in /usr/local/lib/python3.9/dist-packages (from detectron2) (23.1)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.9/dist-packages (from detectron2) (3.7.1)
Requirement already satisfied: omegaconf>=2.1 in /usr/local/lib/python3.9/dist-packages (from detectron2) (2.3.0)
Requirement already satisfied: tqdm>4.29.0 in /usr/local/lib/python3.9/dist-packages (from detectron2) (4.65.0)
Requirement already satisfied: pyyaml>=5.1 in /usr/local/lib/python3.9/dist-packages (from fvcore<0.1.6,>=0.1.5->detectron2) (5.1)
Requirement already satisfied: numpy in /usr/local/lib/python3.9/dist-packages (from fvcore<0.1.6,>=0.1.5->detectron2) (1.22.4)
Requirement already satisfied: antlr4-python3-runtime==4.9.* in /usr/local/lib/python3.9/dist-packages (from hydra-core>=1.1->detectron2) (4.9)
Requirement already satisfied: portalocker in /usr/local/lib/python3.9/dist-packages (from iopath<0.1.10,>=0.1.7->detectron2) (2.7.0)
Requirement already satisfied: importlib-resources>=3.2.0 in /usr/local/lib/python3.9/dist-packages (from matplotlib->detectron2) (5.1)
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.9/dist-packages (from matplotlib->detectron2) (4.39.3)
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.9/dist-packages (from matplotlib->detectron2) (3.0.9)
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Requirement already satisfied: click>=8.0.0 in /usr/local/lib/python3.9/dist-packages (from black->detectron2) (8.1.3)
Requirement already satisfied: typing_extensions>=3.10.0.0 in /usr/local/lib/python3.9/dist-packages (from black->detectron2) (4.5.0)
Requirement already satisfied: platformdirs>=2 in /usr/local/lib/python3.9/dist-packages (from black->detectron2) (3.2.0)
Requirement already satisfied: pathspec>=0.9.0 in /usr/local/lib/python3.9/dist-packages (from black->detectron2) (0.11.1)
Requirement already satisfied: mypy-extensions>=0.4.3 in /usr/local/lib/python3.9/dist-packages (from black->detectron2) (1.0.0)
Requirement already satisfied: tomli>=1.1.0 in /usr/local/lib/python3.9/dist-packages (from black->detectron2) (2.0.1)
Requirement already satisfied: grpcio>=1.48.2 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (1.53.0)
Requirement already satisfied: google-auth-oauthlib<1.1,>=0.5 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (0.4.1)
Requirement already satisfied: werkzeug>=1.0.1 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (2.2.3)
Requirement already satisfied: tensorboard-data-server<0.8.0,>=0.7.0 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (0.7.0)
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Requirement already satisfied: requests<3,>=2.21.0 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (2.27.1)
Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (1.6.0)
Requirement already satisfied: markdown>=2.6.8 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (3.4.3)
Requirement already satisfied: protobuf>=3.19.6 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (3.20.3)
Requirement already satisfied: google-auth<3,>=1.6.3 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (2.17.3)
Requirement already satisfied: wheel>=0.26 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (0.40.0)
Requirement already satisfied: absl-py>=0.4 in /usr/local/lib/python3.9/dist-packages (from tensorboard->detectron2) (1.4.0)
Requirement already satisfied: rsa<5,>=3.1.4 in /usr/local/lib/python3.9/dist-packages (from google-auth<3,>=1.6.3->tensorboard->detectron2) (3.1.4)
Requirement already satisfied: pyasn1-modules>=0.2.1 in /usr/local/lib/python3.9/dist-packages (from google-auth<3,>=1.6.3->tensorboard->detectron2) (0.2.1)
Requirement already satisfied: cachetools<6.0,>=2.0.0 in /usr/local/lib/python3.9/dist-packages (from google-auth<3,>=1.6.3->tensorboard->detectron2) (2.0.0)
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Requirement already satisfied: requests-oauthlib>=0.7.0 in /usr/local/lib/python3.9/dist-packages (from google-auth-oauthlib<1.1,>=0.7.0->tensorboard->detectron2) (0.7.0)
Requirement already satisfied: zipp>=3.1.0 in /usr/local/lib/python3.9/dist-packages (from importlib-resources>=3.2.0->matplotlib->detectron2) (3.1.0)
Requirement already satisfied: importlib-metadata>=4.4 in /usr/local/lib/python3.9/dist-packages (from markdown>=2.6.8->tensorboard->detectron2) (4.4)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.9/dist-packages (from requests<3,>=2.21.0->tensorboard->detectron2) (2.5)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in /usr/local/lib/python3.9/dist-packages (from requests<3,>=2.21.0->tensorboard->detectron2) (1.21.1)
Requirement already satisfied: charset-normalizer~>2.0.0 in /usr/local/lib/python3.9/dist-packages (from requests<3,>=2.21.0->tensorboard->detectron2) (2.0.0)

```

```

# check pytorch installation
# check pytorch installation
import torch, torchvision
print(torch.__version__, torch.cuda.is_available())
assert torch.__version__.startswith("1.9")    # please mrcn 1.9 if Colab changes its default version

```

```
2.0.0+cu118 True

print(outputs["instances"].pred_classes)
print(outputs["instances"].pred_boxes)

tensor([47, 47], device='cuda:0')
Boxes(tensor([[102.5781, 72.5751, 146.9393, 126.1183],
              [143.0388, 33.2461, 187.1436, 88.5947]], device='cuda:0'))
```

```
v= Visualizer(im[:, :, ::-1],MetadataCatalog.get(cfg.DATASETS.TRAIN[0]),scale=1.2)
out=v.draw_instance_predictions(outputs["instances"].to("cpu"))
```

```
def cv2_imshow(im):
    im=cv2.cvtColor(im)
    height = 220
    width = 220
    dim = (width, height)
    res = cv2.resize(img, dim, interpolation=cv2.INTER_LINEAR)

    # Checking the size
    print("RESIZED", res.shape)
    plt.figure(figsize=(25,7.5)),plt.imshow(im),plt.axis('off');
    plt.figure(figsize=(10,5))

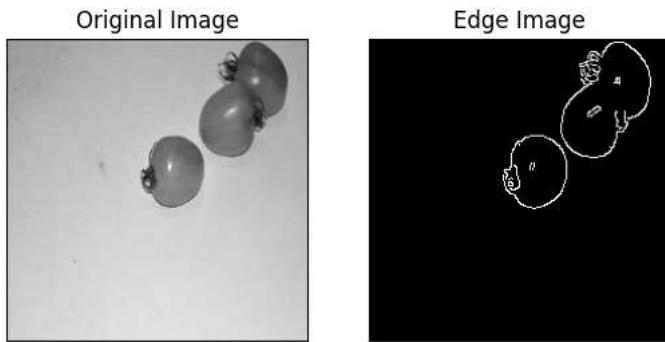
#plt.imshow(out.res[:, :, ::-1])
plt.imshow(res[:, :, ::-1])
```

```
-----
NameError                                 Traceback (most recent call last)
<ipython-input-27-18f0734dce18> in <cell line: 17>()
    15
    16 #plt.imshow(out.res[:, :, ::-1])
--> 17 plt.imshow(res[:, :, ::-1])
    18
```

NameError: name 'res' is not defined

SEARCH STACK OVERFLOW
<Figure size 1000x500 with 0 Axes>

```
import numpy as np
import cv2 as cv
from matplotlib import pyplot as plt
img = cv.imread("/content/1001.jpg", cv.IMREAD_GRAYSCALE)
assert img is not None, "file could not be read, check with os.path.exists()"
edges = cv.Canny(img,100,200)
plt.subplot(121),plt.imshow(img,cmap = 'gray')
plt.title('Original Image'), plt.xticks([]), plt.yticks([])
plt.subplot(122),plt.imshow(edges,cmap = 'gray')
plt.title('Edge Image'), plt.xticks([]), plt.yticks([])
plt.show()
```



```
from detectron2 import model_zoo

cfg=get_cfg()
cfg.MODEL_DEVICE = "cpu"

cfg.merge_from_file(model_zoo.get_config_file("COCO-Keypoints/keypoint_rcnn_R_50_FPN_3x.yaml"))
cfg.MODEL.ROI_HEADS.SCORE_THRESH_TEST=0.5
cfg.MODEL.WEIGHTS = model_zoo.get_checkpoint_url("COCO-Keypoints/keypoint_rcnn_R_50_FPN_3x.yaml")
```

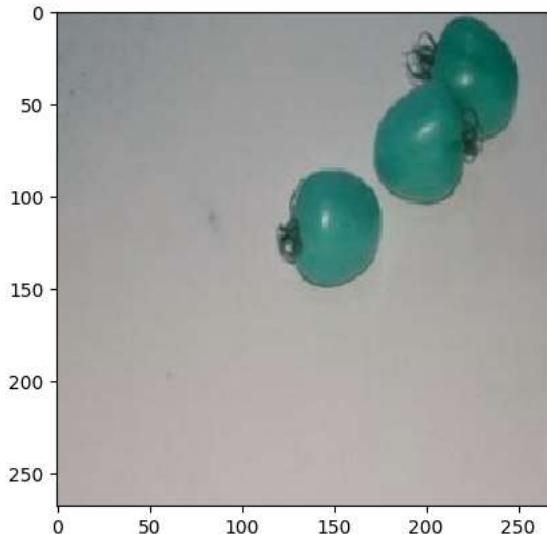
```

im = cv2.imread("/content/1001.jpg")
def cv2_imshow(im):
    im=cv2.cvtColor(im)
    plt.figure(figsize=(25,7.5)),plt.imshow(im),plt.axis('off');
predictor = DefaultPredictor(cfg)
outputs = predictor(im)

v= Visualizer(im[:, :, ::-1],MetadataCatalog.get(cfg.DATASETS.TRAIN[0]),scale=1.2)
out=v.draw_instance_predictions(outputs["instances"].to("cpu"))
plt.imshow(out.get_image()[:, :, ::-1])

```

[04/21 08:27:39 d2.checkpoint.detection_checkpoint]: [DetectionCheckpointer] Loading from https://dl.fbaipublicfiles.com/detectron2/model_final_a6e10b.pkl: 237MB [00:01, 131MB/s]
<matplotlib.image.AxesImage at 0x7fef97175130>



```

import os
import numpy as np
import matplotlib.pyplot as plt
import matplotlib.image as mpimg
import cv2

# defining global variable path
image_path = "/content/1001.jpg"

def loadImages(path):
    # Put files into lists and return them as one list of size 4
    image_files = sorted(image_path, file)
    if file.endswith('.jpg'):

        return image_files

def display_one(a, title1 = "Original"):
    plt.imshow(a), plt.title(title1)
    plt.xticks([]), plt.yticks([])
    plt.show()

def processing(data):
    # loading image
    img = cv2.imread("/content/1001.jpg")
    print(img.shape)
    # -----
    # setting dim of the resize
    height = 220
    width = 220
    dim = (width, height)
    res = cv2.resize(img, dim, interpolation=cv2.INTER_LINEAR)

    # Checcking the size
    print("RESIZED", res.shape)

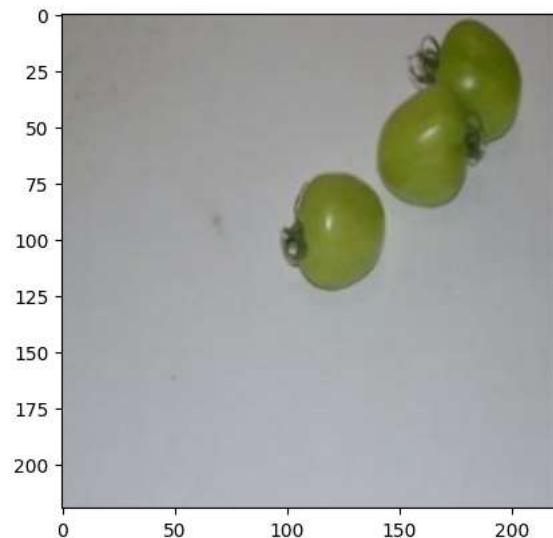
```

```
# Visualizing one of the images in the array
original = res
display_one(original)

img = cv2.imread("/content/1001.jpg")
print('ORIGINAL', img.shape)

ORIGINAL (224, 224, 3)

height = 220
width = 220
dim = (width, height)
res = cv2.resize(img, dim, interpolation=cv2.INTER_LINEAR)
print("RESIZED", res.shape)
plt.imshow(res[:, :, ::-1])
```



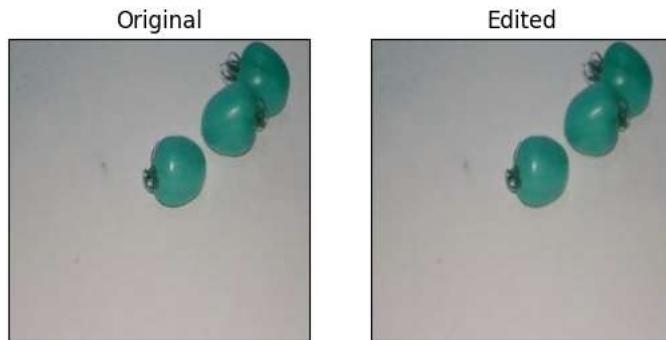
```
original = res
display_one(original)
```



```
def display(a, b, title1 = "Original", title2 = "Edited"):
    plt.subplot(121), plt.imshow(a), plt.title(title1)
    plt.xticks([]), plt.yticks([])
    plt.subplot(122), plt.imshow(b), plt.title(title2)
```

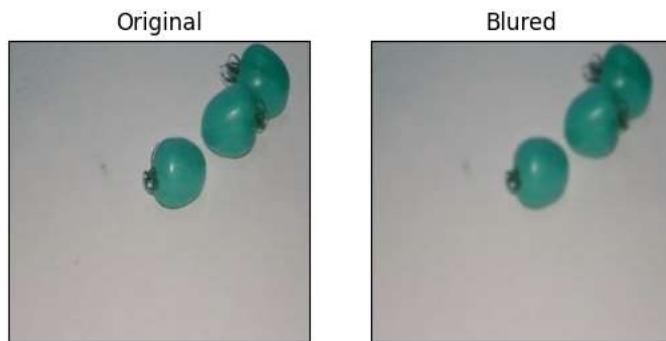
```
plt.xticks([]), plt.yticks([])
plt.show()
```

```
original = img
edited = res
display(original, edited)
```



```
blur = cv2.GaussianBlur(res, (5, 5), 0)
```

```
display(original, blur, 'Original', 'Blurred')
```

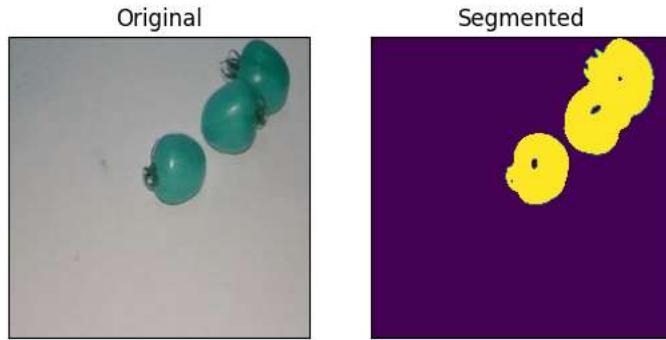


```
gray = cv2.cvtColor(blur, cv2.COLOR_RGB2GRAY)
```

```
ret, thresh = cv2.threshold(gray, 0, 255, cv2.THRESH_BINARY_INV + cv2.THRESH_OTSU)
```

```
# Displaying segmented images
```

```
display(original, thresh, 'Original', 'Segmented')
```



```
kernel = np.ones((3, 3), np.uint8)
```

```
opening = cv2.morphologyEx(thresh, cv2.MORPH_OPEN, kernel, iterations=2)
```

```
# sure background area
```

```
sure_bg = cv2.dilate(opening, kernel, iterations=3)
```

```
# Finding sure foreground area
```

```
dist_transform = cv2.distanceTransform(opening, cv2.DIST_L2, 5)
```

```
ret, sure_fg = cv2.threshold(dist_transform, 0.7 * dist_transform.max(), 255, 0)
```

```
# Finding unknown region
```

```
sure_fg = np.uint8(sure_fg)
```

```
unknown = cv2.subtract(sure_bg, sure_fg)
```