kaggle api

```
# Install Kaggle API
!pip install kaggle

# Create directory
!mkdir -p ~/.kaggle

# Copy kaggle.json (must be uploaded first)
!cp /content/kaggle.json ~/.kaggle/

# Change permissions
!chmod 600 ~/.kaggle/kaggle.json

print("Kaggle API Successfully Configured!")
```

```
Requirement already satisfied: kaggle in /usr/local/lib/python3.12/dist-packages (1.7.4.5)
Requirement already satisfied: bleach in /usr/local/lib/python3.12/dist-packages (from kaggle) (6.3.0)
Requirement already satisfied: certifi>=14.05.14 in /usr/local/lib/python3.12/dist-packages (from kaggle) (2025.11.12)
Requirement already satisfied: charset-normalizer in /usr/local/lib/python3.12/dist-packages (from kaggle) (3.4.4)
Requirement already satisfied: idna in /usr/local/lib/python3.12/dist-packages (from kaggle) (3.11)
Requirement already satisfied: protobuf in /usr/local/lib/python3.12/dist-packages (from kaggle) (5.29.5)
Requirement already satisfied: python-dateutil>=2.5.3 in /usr/local/lib/python3.12/dist-packages (from kaggle) (2.9.0.post0)
Requirement already satisfied: python-slugify in /usr/local/lib/python3.12/dist-packages (from kaggle) (8.0.4)
Requirement already satisfied: requests in /usr/local/lib/python3.12/dist-packages (from kaggle) (2.32.4)
Requirement already satisfied: setuptools>=21.0.0 in /usr/local/lib/python3.12/dist-packages (from kaggle) (75.2.0)
Requirement already satisfied: six>=1.10 in /usr/local/lib/python3.12/dist-packages (from kaggle) (1.17.0)
Requirement already satisfied: text-unidecode in /usr/local/lib/python3.12/dist-packages (from kaggle) (1.3)
Requirement already satisfied: tqdm in /usr/local/lib/python3.12/dist-packages (from kaggle) (4.67.1)
Requirement already satisfied: urllib3>=1.15.1 in /usr/local/lib/python3.12/dist-packages (from kaggle) (2.5.0)
Requirement already satisfied: webencodings in /usr/local/lib/python3.12/dist-packages (from kaggle) (0.5.1)
Kaggle API Successfully Configured!
```

Clone YOLOv8

```
!git clone https://github.com/ultralytics/ultralytics
%cd ultralytics
```

```
Cloning into 'ultralytics'...
remote: Enumerating objects: 75907, done.
remote: Counting objects: 100% (27/27), done.
remote: Compressing objects: 100% (20/20), done.
remote: Total 75907 (delta 7), reused 13 (delta 6), pack-reused 75880 (from 1)
Receiving objects: 100% (75907/75907), 40.25 MiB | 25.04 MiB/s, done.
Resolving deltas: 100% (57124/57124), done.
/content/ultralytics
```

install YOLOv8

```
!pip install -e .
import torch
print("GPU:", torch.cuda.get_device_name(0))
```

```
Obtaining file:///content/ultralytics
  Installing build dependencies ... done
  Checking if build backend supports build_editable ... done
  Getting requirements to build editable ... done
  Preparing editable metadata (pyproject.toml) ... done
Requirement already satisfied: numpy>=1.23.0 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233) (2.0.2
Requirement already satisfied: matplotlib>=3.3.0 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233) (3
Requirement already satisfied: opencv-python>=4.6.0 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233)
Requirement already satisfied: pillow>=7.1.2 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233) (11.3.
Requirement already satisfied: pyyaml>=5.3.1 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233) (6.0.3
Requirement already satisfied: requests>=2.23.0 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233) (2.
Requirement already satisfied: scipy>=1.4.1 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233) (1.16.3
Requirement already satisfied: torch>=1.8.0 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233) (2.9.0+
Requirement already satisfied: torchvision>=0.9.0 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233) (
Requirement already satisfied: psutil>=5.8.0 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233) (5.9.5
Requirement already satisfied: polars>=0.20.0 in /usr/local/lib/python3.12/dist-packages (from ultralytics==8.3.233) (1.31
Collecting ultralytics-thop>=2.0.18 (from ultralytics==8.3.233)
  Downloading ultralytics_thop-2.0.18-py3-none-any.whl.metadata (14 kB)
Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib>=3.3.0->ultral
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.12/dist-packages (from matplotlib>=3.3.0->ultralytic
Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.12/dist-packages (from matplotlib>=3.3.0->ultra
Requirement already satisfied: kiwisolver>=1.3.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib>=3.3.0->ultra
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.12/dist-packages (from matplotlib>=3.3.0->ultraly
Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.12/dist-packages (from matplotlib>=3.3.0->ultral
```

```
Requirement already satisfied: python-dateutil>=2.7 in /usr/local/lib/python3.12/dist-packages (from matplotlib>=3.3.0->ul
Requirement already satisfied: charset_normalizer<4,>=2 in /usr/local/lib/python3.12/dist-packages (from requests>=2.23.0-
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.12/dist-packages (from requests>=2.23.0->ultralytics
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.12/dist-packages (from requests>=2.23.0->ultra
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.12/dist-packages (from requests>=2.23.0->ultra
Requirement already satisfied: filelock in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->ultralytics==8.3.23
Requirement already satisfied: typing-extensions>=4.10.0 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->ul
Requirement already satisfied: setuptools in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->ultralytics==8.3.
Requirement already satisfied: sympy>=1.13.3 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->ultralytics==8
Requirement already satisfied: networkx>=2.5.1 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->ultralytics=
Requirement already satisfied: jinja2 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->ultralytics==8.3.233)
Requirement already satisfied: fsspec>=0.8.5 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->ultralytics==8
Requirement already satisfied: nvidia-cuda-nvrtc-cu12==12.6.77 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8
Requirement already satisfied: nvidia-cuda-runtime-cu12==12.6.77 in /usr/local/lib/python3.12/dist-packages (from torch>=1
Requirement already satisfied: nvidia-cuda-cupti-cu12==12.6.80 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8
Requirement already satisfied: nvidia-cudnn-cu12==9.10.2.21 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0-
Requirement already satisfied: nvidia-cublas-cu12==12.6.4.1 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0-
Requirement already satisfied: nvidia-cufft-cu12==11.3.0.4 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->
Requirement already satisfied: nvidia-curand-cu12==10.3.7.77 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0
Requirement already satisfied: nvidia-cusolver-cu12==11.7.1.2 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.
Requirement already satisfied: nvidia-cusparse-cu12==12.5.4.2 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.
Requirement already satisfied: nvidia-cusparselt-cu12==0.7.1 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0
Requirement already satisfied: nvidia-nccl-cu12==2.27.5 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->ult
Requirement already satisfied: nvidia-nvshmem-cu12==3.3.20 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->
Requirement already satisfied: nvidia-nvtx-cu12==12.6.77 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->ul
Requirement already satisfied: nvidia-nvjitlink-cu12==12.6.85 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.
Requirement already satisfied: nvidia-cufile-cu12==1.11.1.6 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0-
Requirement already satisfied: triton==3.5.0 in /usr/local/lib/python3.12/dist-packages (from torch>=1.8.0->ultralytics==8
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.12/dist-packages (from python-dateutil>=2.7->matplotlib>
Requirement already satisfied: mpmath<1.4,>=1.1.0 in /usr/local/lib/python3.12/dist-packages (from sympy>=1.13.3->torch>=1
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.12/dist-packages (from jinja2->torch>=1.8.0->ultr
Downloading ultralytics_thop-2.0.18-py3-none-any.whl (28 kB)
Building wheels for collected packages: ultralytics
```

prepare dataset folder

```
import os, shutil

print("🧹 Cleaning datasets directory...")
if os.path.exists('/content/datasets'):
    shutil.rmtree('/content/datasets')

os.makedirs('/content/datasets')

%cd /content/datasets
```

```
🧹 Cleaning datasets directory...
/content/datasets
```

download brain tumour Dataset

```
print("⬇️ Downloading Brain Tumor Dataset...")
!kaggle datasets download -d pkdarabi/medical-image-dataset-brain-tumor-detection
```

```
⬇️ Downloading Brain Tumor Dataset...
Dataset URL: https://www.kaggle.com/datasets/pkdarabi/medical-image-dataset-brain-tumor-detection
License(s): Attribution 4.0 International (CC BY 4.0)
Downloading medical-image-dataset-brain-tumor-detection.zip to /content/datasets
 50% 149M/297M [00:00<00:00, 1.56GB/s]
100% 297M/297M [00:03<00:00, 99.4MB/s]
```

unzip data set

```
print("📦 Unzipping...")
!unzip -q medical-image-dataset-brain-tumor-detection.zip
!rm medical-image-dataset-brain-tumor-detection.zip
```

```
📦 Unzipping...
```

Auto-Fix data.yaml

```
import os

print("🔍 Locating data.yaml...")

yaml_path = None

for root, dirs, files in os.walk('/content/datasets'):
```

```
    if 'data.yaml' in files:
        yaml_path = os.path.join(root, 'data.yaml')
        break

if yaml_path is None:
    raise FileNotFoundError("❌ data.yaml not found!")

dataset_root = os.path.abspath(os.path.dirname(yaml_path))

yaml_content = f"""
path: {dataset_root}
train: train/images
val: valid/images
test: test/images

nc: 3
names: ['glioma', 'meningioma', 'pituitary']
"""

with open(yaml_path, 'w') as f:
    f.write(yaml_content)

print("✅ FIXED data.yaml at:", yaml_path)
print("📍 Dataset root:", dataset_root)
```

```
🔍 Locating data.yaml...
✅ FIXED data.yaml at: /content/datasets/BrainTumor/BrainTumorYolov11/data.yaml
📍 Dataset root: /content/datasets/BrainTumor/BrainTumorYolov11
```

now our basic data set _YOLO set up is ready

Inject DMSANet into tasks.py

```
import re

tasks_path = "/content/ultralytics/ultralytics/nn/tasks.py"

dmsanet_code = """
# --- DMSANet Attention START ---
import torch.nn as nn

class DMSANet(nn.Module):
    def __init__(self, c1, c2=None, reduction=16):
        super().__init__()
        if c2 is None:
            c2 = c1
        if c1 != c2:
            c1 = c2
        self.c = c1

        self.dw_small = nn.Conv2d(c1, c1, kernel_size=3, padding=1, groups=c1, bias=False)
        self.dw_large = nn.Conv2d(c1, c1, kernel_size=5, padding=2, groups=c1, bias=False)

        mid = max(8, c1 // reduction)
        self.mlp = nn.Sequential(
            nn.Linear(c1, mid, bias=False),
            nn.ReLU(inplace=True),
            nn.Linear(mid, c1, bias=False),
            nn.Sigmoid()
        )

    def forward(self, x):
        b, c, h, w = x.shape
        s1 = self.dw_small(x)
        s2 = self.dw_large(x)
        s = s1 + s2
        gap = s.view(b, c, -1).mean(-1)
        attn = self.mlp(gap).view(b, c, 1, 1)
        return x * attn
# --- DMSANet Attention END ---
"""

print("🔧 Searching for 'class BaseModel'...")

with open(tasks_path, "r") as f:
    content = f.readlines()

# Find the line index where BaseModel starts
insert_index = None
```

```
for idx, line in enumerate(content):
    if line.strip().startswith("class BaseModel"):
        insert_index = idx
        break

if insert_index is None:
    print("❌ ERROR: Still cannot find class BaseModel — send me first 200 lines again.")
else:
    print(f"✅ Found 'class BaseModel' at line {insert_index}")

    # Insert DMSANet before this line
    new_content = content[:insert_index] + [dmsanet_code + "\n"] + content[insert_index:]

    # Write back to file
    with open(tasks_path, "w") as f:
        f.writelines(new_content)

    print("✅ DMSANet successfully injected above BaseModel.")

    # Now register DMSANet inside the YOLO safe module list
    with open(tasks_path, "r") as f:
        content = f.read()

    content = content.replace(
        "if m in (",
        "if m in (DMSANet, ",
        1
    )

    with open(tasks_path, "w") as f:
        f.write(content)

    print("✅ DMSANet registered in safe module list.")
```

```
🔧 Searching for 'class BaseModel'...
✅ Found 'class BaseModel' at line 96
✅ DMSANet successfully injected above BaseModel.
✅ DMSANet registered in safe module list.
```

Create yolov8n-dmsanet.yaml

```
dmsanet_yaml = """
# YOLOv8n + DMSANet (Dual Multi-Scale Attention)

nc: 3  # glioma, meningioma, pituitary

backbone:
  - [-1, 1, Conv, [64, 3, 2]]
  - [-1, 1, Conv, [128, 3, 2]]
  - [-1, 3, C2f, [128, True]]
  - [-1, 1, Conv, [256, 3, 2]]
  - [-1, 6, C2f, [256, True]]
  - [-1, 1, Conv, [512, 3, 2]]
  - [-1, 6, C2f, [512, True]]
  - [-1, 1, Conv, [1024, 3, 2]]
  - [-1, 3, C2f, [1024, True]]
  - [-1, 1, SPPF, [1024, 5]]

  # DMSANet at the highest-level feature map (1024 channels)
  - [-1, 1, DMSANet, [1024]]

head:
  - [-1, 1, nn.Upsample, [None, 2, 'nearest']]
  - [[-1, 6], 1, Concat, [1]]
  - [-1, 3, C2f, [512]]

  - [-1, 1, nn.Upsample, [None, 2, 'nearest']]
  - [[-1, 4], 1, Concat, [1]]
  - [-1, 3, C2f, [256]]

  - [-1, 1, Conv, [256, 3, 2]]
  - [[-1, 13], 1, Concat, [1]]
  - [-1, 3, C2f, [512]]

  - [-1, 1, Conv, [512, 3, 2]]
  - [[-1, 10], 1, Concat, [1]]
  - [-1, 3, C2f, [1024]]

  - [[16, 19, 22], 1, Detect, [nc]]
"""
```

```
with open("/content/ultralytics/yolov8n-dmsanet.yaml", "w") as f:
    f.write(dmsanet_yaml)

print("✅ Created yolov8n-dmsanet.yaml")
```

```
✅ Created yolov8n-dmsanet.yaml
```

Train YOLOv8 + DMSANet

```
%cd /content/ultralytics
import os
os.environ["WANDB_DISABLED"] = "true"

!yolo detect train \
  data=/content/datasets/BrainTumor/BrainTumorYolov11/data.yaml \
  model=/content/ultralytics/yolov8n-dmsanet.yaml \
  epochs=50 \
  imgsz=640 \
  batch=16 \
  name=YOLOv8_DMSANet
```

```
/content/ultralytics
Creating new Ultralytics Settings v0.0.6 file ✅
View Ultralytics Settings with 'yolo settings' or at '/root/.config/Ultralytics/settings.json'
Update Settings with 'yolo settings key=value', i.e. 'yolo settings runs_dir=path/to/dir'. For help see https://docs.ultra
Ultralytics 8.3.233 🚀 Python-3.12.12 torch-2.9.0+cu126 CUDA:0 (Tesla T4, 15095MiB)
engine/trainer: agnostic_nms=False, amp=True, augment=False, auto_augment=randaugment, batch=16, bgr=0.0, box=7.5, cache=F
Downloading https://ultralytics.com/assets/Arial.ttf to '/root/.config/Ultralytics/Arial.ttf': 100% ━━━━━━━━━━━━ 755.1KB 2

                   from  n    params  module                                       arguments
  0                  -1  1      1856  ultralytics.nn.modules.conv.Conv             [3, 64, 3, 2]
  1                  -1  1     73984  ultralytics.nn.modules.conv.Conv             [64, 128, 3, 2]
  2                  -1  3    279808  ultralytics.nn.modules.block.C2f             [128, 128, 3, True]
  3                  -1  1    295424  ultralytics.nn.modules.conv.Conv             [128, 256, 3, 2]
  4                  -1  6   2101248  ultralytics.nn.modules.block.C2f             [256, 256, 6, True]
  5                  -1  1   1180672  ultralytics.nn.modules.conv.Conv             [256, 512, 3, 2]
  6                  -1  6   8396800  ultralytics.nn.modules.block.C2f             [512, 512, 6, True]
  7                  -1  1   4720640  ultralytics.nn.modules.conv.Conv             [512, 1024, 3, 2]
  8                  -1  3  17836032  ultralytics.nn.modules.block.C2f             [1024, 1024, 3, True]
  9                  -1  1   2624512  ultralytics.nn.modules.block.SPPF            [1024, 1024, 5]
 10                  -1  1    165888  ultralytics.nn.tasks.DMSANet                 [1024]
 11                  -1  1         0  torch.nn.modules.upsampling.Upsample         [None, 2, 'nearest']
 12             [-1, 6]  1         0  ultralytics.nn.modules.conv.Concat           [1]
 13                  -1  3   4985856  ultralytics.nn.modules.block.C2f             [1536, 512, 3]
 14                  -1  1         0  torch.nn.modules.upsampling.Upsample         [None, 2, 'nearest']
 15             [-1, 4]  1         0  ultralytics.nn.modules.conv.Concat           [1]
 16                  -1  3   1247744  ultralytics.nn.modules.block.C2f             [768, 256, 3]
 17                  -1  1    590336  ultralytics.nn.modules.conv.Conv             [256, 256, 3, 2]
 18            [-1, 13]  1         0  ultralytics.nn.modules.conv.Concat           [1]
 19                  -1  3   4592640  ultralytics.nn.modules.block.C2f             [768, 512, 3]
 20                  -1  1   2360320  ultralytics.nn.modules.conv.Conv             [512, 512, 3, 2]
 21            [-1, 10]  1         0  ultralytics.nn.modules.conv.Concat           [1]
 22                  -1  3  18360320  ultralytics.nn.modules.block.C2f             [1536, 1024, 3]
 23        [16, 19, 22]  1   7059673  ultralytics.nn.modules.head.Detect           [3, [256, 512, 1024]]
YOLOv8n-dmsanet summary: 215 layers, 76,873,753 parameters, 76,873,737 gradients, 192.6 GFLOPs

Freezing layer 'model.23.dfl.conv.weight'
AMP: running Automatic Mixed Precision (AMP) checks...
Downloading https://github.com/ultralytics/assets/releases/download/v8.3.0/yolo11n.pt to 'yolo11n.pt': 100% ━━━━━━━━━━━━ 5
AMP: checks passed ✅
train: Fast image access ✅ (ping: 0.0±0.0 ms, read: 1222.6±471.4 MB/s, size: 32.5 KB)
train: Scanning /content/datasets/BrainTumor/BrainTumorYolov11/train/labels... 2144 images, 0 backgrounds, 0 corrupt: 100%
train: New cache created: /content/datasets/BrainTumor/BrainTumorYolov11/train/labels.cache
WARNING ⚠️ Box and segment counts should be equal, but got len(segments) = 2143, len(boxes) = 2144. To resolve this only b
albumentations: Blur(p=0.01, blur_limit=(3, 7)), MedianBlur(p=0.01, blur_limit=(3, 7)), ToGray(p=0.01, method='weighted_av
val: Fast image access ✅ (ping: 0.0±0.0 ms, read: 915.4±461.1 MB/s, size: 31.8 KB)
val: Scanning /content/datasets/BrainTumor/BrainTumorYolov11/valid/labels... 612 images, 0 backgrounds, 0 corrupt: 100% ━━
val: New cache created: /content/datasets/BrainTumor/BrainTumorYolov11/valid/labels.cache
Plotting labels to /content/ultralytics/runs/detect/YOLOv8_DMSANet/labels.jpg...
optimizer: 'optimizer=auto' found, ignoring 'lr0=0.01' and 'momentum=0.937' and determining best 'optimizer', 'lr0' and 'm
optimizer: AdamW(lr=0.001429, momentum=0.9) with parameter groups 97 weight(decay=0.0), 108 weight(decay=0.0005), 103 bias
Image sizes 640 train, 640 val
Using 2 dataloader workers
Logging results to /content/ultralytics/runs/detect/YOLOv8_DMSANet
Starting training for 50 epochs...

      Epoch    GPU_mem   box_loss   cls_loss   dfl_loss  Instances       Size
       1/50      10.1G      3.057      4.711      3.755         31        640: 100% ━━━━━━━━━━━━ 134/134 1.1it/s 2:02
```