Colab training notebook

This notebook runs the existing training code from the repository on Google Colab (GPU runtime). It installs required packages, mounts Google Drive optionally for dataset/checkpoints, and calls the train entrypoint in `src/train.py` so functionality remains unchanged.

Notes:

- Make sure your dataset folder has `dr_labels.csv` and a `DR_images/` subfolder.
- You can either upload the `data/` folder to Colab session storage, or mount Google Drive and point `--data-dir` to a folder on Drive.
- If you prefer to run from a GitHub repo, upload this workspace to a public GitHub and use the git clone cell below.

```
# Install required packages (run once)
# Runtime: select 'Runtime' -> 'Change runtime type' -> Hardware accelerator: GPU
# Install CUDA-enabled PyTorch (Colab GPU runtime usually supports the latest stable CUDA).
# This installs torch and torchvision with GPU support, then the remaining requirements.
!pip install -q torch torchvision --extra-index-url https://download.pytorch.org/whl/cu117
!pip install -r requirements_colab.txt --quiet
```

```
%cd /content
```

```
/content
```

```
mkdir /content/Diabetic-Retinopathy
```

```
!rm -rf /content/Diabetic-Retinopathy  # remove any previous copy
!git clone https://github.com/Ojasvsakhi/Diabetic-Retinopathy.git /content/Diabetic-Retinopathy
%cd /content/Diabetic-Retinopathy

# Option 3: Mount Google Drive to access large datasets or persist checkpoints
from google.colab import drive
drive.mount('/content/drive')
import os
# Your dataset is in My Drive in the folder named exactly 'DR dataset'
DATA_DIR = '/content/drive/MyDrive/DR Dataset'
if not os.path.exists(DATA_DIR):
    print('Warning: expected DATA_DIR not found:', DATA_DIR)
```

```
else:
    print('Using DATA_DIR =', DATA_DIR)
```

```
Cloning into '/content/Diabetic-Retinopathy'...
remote: Enumerating objects: 37, done.
remote: Counting objects: 100% (37/37), done.
remote: Compressing objects: 100% (27/27), done.
remote: Total 37 (delta 11), reused 32 (delta 7), pack-reused 0 (from 0)
Receiving objects: 100% (37/37), 19.44 KiB | 19.44 MiB/s, done.
Resolving deltas: 100% (11/11), done.
/content/Diabetic-Retinopathy
Mounted at /content/drive
Using DATA_DIR = /content/drive/MyDrive/DR Dataset
```

```
import sys, os
# make sure src is on PYTHONPATH (adjust if you cloned into a subfolder)
repo_src = os.path.join(os.getcwd(), 'src')
if os.path.exists(repo_src):
    sys.path.insert(0, repo_src)
else:
    sys.path.append('src')

# parse args similar to running `python -m src.train`
from argparse import Namespace
from src.train import train

args = Namespace(
    data_dir=DATA_DIR,  # using your Drive folder 'DR dataset'
    epochs=20,
    batch_size=16,
    img_size=224,
    lr=1e-4,
    num_workers=2
)

# Kick off training
train(args)
```

```
Epoch 4/20 [train]: 100%|██████████| 25/25 [00:39<00:00,  1.57s/it, loss=0.706]
Validation: 100%|██████████| 7/7 [00:10<00:00,  1.43s/it]
Epoch 4 validation -- acc: 0.6061 macro-F1: 0.5092
Epoch 5/20 [train]: 100%|██████████| 25/25 [00:37<00:00,  1.51s/it, loss=0.502]
Validation: 100%|██████████| 7/7 [00:09<00:00,  1.37s/it]
Epoch 5 validation -- acc: 0.5758 macro-F1: 0.4546
Epoch 6/20 [train]: 100%|██████████| 25/25 [00:39<00:00,  1.57s/it, loss=0.467]
Validation: 100%|██████████| 7/7 [00:10<00:00,  1.43s/it]
Epoch 6 validation -- acc: 0.5354 macro-F1: 0.3927
Epoch 7/20 [train]: 100%|██████████| 25/25 [00:38<00:00,  1.53s/it, loss=0.335]
Validation: 100%|██████████| 7/7 [00:08<00:00,  1.26s/it]
Epoch 7 validation -- acc: 0.5960 macro-F1: 0.3887
Epoch 8/20 [train]: 100%|██████████| 25/25 [00:38<00:00,  1.55s/it, loss=0.325]
Validation: 100%|██████████| 7/7 [00:09<00:00,  1.42s/it]
Epoch 8 validation -- acc: 0.6162 macro-F1: 0.4697
Epoch 9/20 [train]: 100%|██████████| 25/25 [00:38<00:00,  1.54s/it, loss=0.316]
Validation: 100%|██████████| 7/7 [00:08<00:00,  1.22s/it]
Epoch 9 validation -- acc: 0.6263 macro-F1: 0.5456
Epoch 10/20 [train]: 100%|██████████| 25/25 [00:39<00:00,  1.56s/it, loss=0.268]
Validation: 100%|██████████| 7/7 [00:10<00:00,  1.44s/it]
Epoch 10 validation -- acc: 0.5960 macro-F1: 0.5341
Epoch 11/20 [train]: 100%|██████████| 25/25 [00:38<00:00,  1.56s/it, loss=0.179]
Validation: 100%|██████████| 7/7 [00:08<00:00,  1.23s/it]
Epoch 11 validation -- acc: 0.5657 macro-F1: 0.5396
Epoch 12/20 [train]: 100%|██████████| 25/25 [00:39<00:00,  1.57s/it, loss=0.166]
Validation: 100%|██████████| 7/7 [00:10<00:00,  1.45s/it]
Epoch 12 validation -- acc: 0.6061 macro-F1: 0.5834
Epoch 13/20 [train]: 100%|██████████| 25/25 [00:38<00:00,  1.55s/it, loss=0.204]
Validation: 100%|██████████| 7/7 [00:08<00:00,  1.25s/it]
Epoch 13 validation -- acc: 0.5960 macro-F1: 0.5461
Epoch 14/20 [train]: 100%|██████████| 25/25 [00:39<00:00,  1.56s/it, loss=0.202]
Validation: 100%|██████████| 7/7 [00:10<00:00,  1.43s/it]
Epoch 14 validation -- acc: 0.6566 macro-F1: 0.5063
Epoch 15/20 [train]: 100%|██████████| 25/25 [00:39<00:00,  1.56s/it, loss=0.235]
Validation: 100%|██████████| 7/7 [00:09<00:00,  1.38s/it]
Epoch 15 validation -- acc: 0.5960 macro-F1: 0.4548
Epoch 16/20 [train]: 100%|██████████| 25/25 [00:37<00:00,  1.51s/it, loss=0.193]
Validation: 100%|██████████| 7/7 [00:09<00:00,  1.43s/it]
Epoch 16 validation -- acc: 0.6263 macro-F1: 0.5106
Epoch 17/20 [train]: 100%|██████████| 25/25 [00:39<00:00,  1.56s/it, loss=0.169]
Validation: 100%|██████████| 7/7 [00:10<00:00,  1.45s/it]
Epoch 17 validation -- acc: 0.5960 macro-F1: 0.5671
Epoch 18/20 [train]: 100%|██████████| 25/25 [00:37<00:00,  1.51s/it, loss=0.171]
```