Deep Supervised Image Retargeting: Implementation Code

Codes

- **Full submission code (training + evaluation).** The complete implementation is provided on GitHub (see AliSaraeb1/deep-supervised-image-retargeting).
  In the file `deep_supervised_image_retargeting.ipynb`, there is a detailed explanation of the method and implementation details.
- **OSC quick test (pretrained only, $\approx$ 3 minutes).** In addition, we provide the code `mrgan_run_pretrained.py` (see `/fs/scratch/PAS3162/Saraeb.1` in OSC) that only loads pretrained checkpoints (no training), evaluates them on TIReD, prints metrics, and saves a small set of example outputs. We will keep a copy of `mrgan_run_pretrained.py` on Github as well, but that does not contain details about implementation, and it's easier and clearer to use the OSC files for a quicker run.
  (see `deep_supervised_image_retargeting.ipynb` on Github for implementation details).

Testing on OSC

On OSC in `/fs/scratch/PAS3162/Saraeb.1`, you can find the code `mrgan_run_pretrained.py`, the sbatch file `mrgan_run_pretrained.sbatch`, and the best checkpoints `mrgan_no_Lm_tv_best3.pth` and `mrgan_tired_best.pth`.

Moreover, the TIReD dataset is avaiable on OSC here `/fs/scratch/PAS3162/TIReD`. In TIReD, `train/test_A` contains the original input images, and `train/test_B` contains the ground-truth retargeted images (with optional masks in `_B_mask`).

The outputs are automatically saved here `mrgan_run.42527050.out` and generated images are here `/fs/scratch/PAS3162/Saraeb.1/mrgan_examples/`.

How to run

Outups are already available on OSC. To run the pretrained model code again,

Installation (Python packages)

If needed, install the required packages:

```
pip install torch torchvision piq opencv-python scikit-image matplotlib tqdm pillow
```

Advanced algorithm output

The learned models are provided as pretrained checkpoints (`.pth`) in `/fs/scratch/PAS3162/Saraeb.1`. They are the files `mrgan_no_Lm_tv_best3.pth` and `mrgan_tired_best.pth` (available on Github as well).

Test examples and outputs

For copyright reasons, we cannot share the outputted images on GitHub. We ran the best models on the test dataset available at `/fs/scratch/PAS3162/TIReD` and saved sample image results as PNG triplets (Input / GT / Output) under
`/fs/scratch/PAS3162/Saraeb.1/mrgan_examples/<model>/<dataset>/`.

How to run pretrained models on test examples

Simply open a terminal on OSC. Then `cd /fs/scratch/PAS3162/Saraeb.1`. Then submit the job `sbatch mrgan_run_pretrained.sbatch`. That's it.
Metrics print to `mrgan_run.<JOBID>.out`.

About the outputs

For each dataset we report metrics for `in` (input vs. ground truth) and `out` (model output vs. GT). Success is when we improve similarity to the ground truth, i.e. `out` > `in` for PSNR/SSIM/FSIM/VIF.